**IN THE UNITED STATES DISTRICT COURT
FOR THE SOURTHERN DISTRICT OF NEW YORK**

MASTEROBJECTS, INC.,	)	
	)	
	)	Civil Action No. 1:20-cv-3478
Plaintiff,	)	
	)	
v.	)	JURY TRIAL DEMANDED
	)	
AMAZON.COM, INC.	)	
	)	
Defendant.	)	
	)	

COMPLAINT FOR PATENT INFRINGEMENT

MasterObjects, Inc. ("MasterObjects" or "Plaintiff") hereby files its complaint against Amazon.com, Inc. ("Amazon" or "Defendant"). For its complaint, MasterObjects alleges, on personal knowledge as to its own acts and on information and belief as to all other matters, as follows:

I.   NATURE OF THE ACTION

1.   This complaint asserts causes of action for patent infringement under the Patent Act, 35 U.S.C. §§ 1 et. seq., including § 271.

II.   PARTIES

2.   MasterObjects is a corporation organized under the laws of the State of Delaware, with its principal place of business in the Netherlands.

3.   Amazon.com, Inc. is a corporation organized under the laws of the State of Delaware, with its principal place of business in Seattle, Washington.

III.   JURISDICTION AND VENUE

4.   This Court has subject matter jurisdiction over this matter by virtue of 28 U.S.C. § 1338(a).

5.   This Court has general personal jurisdiction over Amazon because Amazon maintains regular and established places of business in New York. Amazon has multiple offices in New York, including multiple, large offices in New York City.

6.   Further, this Court has specific personal jurisdiction over Amazon in this action pursuant to due process and New York's Long Arm Statute, because Amazon has committed acts giving rise to this action within New York and within this judicial District. Amazon also regularly does business or solicits business in this District and in New York, and engages in other persistent courses of conduct. The claims asserted herein arise out of or are related to Amazon's voluntary contacts with this forum, such voluntary contacts including but not limited to: (i) at least a portion of the actions complained of herein; (ii) purposefully and voluntarily placing one or more Accused Instrumentalities into the stream of commerce with the expectation that they will be used by consumers in this forum; or (iii) regularly doing or soliciting business, engaging in other persistent courses of conduct, or deriving substantial revenue from Accused Instrumentalities provided to individuals in New York and in this District. Amazon has purposefully engaged in substantial, continuous, and systematic contacts within this District, and should reasonably expect to be sued in a court in this District. Given these contacts, the Court's exercise of jurisdiction over Amazon will not offend traditional notions of fair play and substantial justice.

7.   Venue is proper in this Court by virtue of 28 U.S.C. § 1400(b), in that Amazon has committed acts of infringement in this District, and has regular and established places of business in this District.

8.   Amazon has regular and established places of business in this District, including multiple offices in Manhattan. Indeed, according to a prominent news organization, in

December 2019 Amazon signed a deal to lease 335,000 square feet of space in Manhattan's New

Hudson Yards neighborhood where it would employ around 1,500 employees. Amazon's pursuit

of an HQ2 deal in this District is infamous. Even after scrapping its HQ2 plan in New York,

Amazon explained that it "love[s] New York" and even as of February 14, 2019, it had "over

5,000 Amazon employees in Brooklyn, Manhattan, and Staten Island" and "plan[ed] to continue

growing these teams."   By December of 2019, according to CNN, Amazon employed more than

8,000 people in New York City.   New York City is one of Amazon's "18 Tech Hubs,"

according to an Amazon spokesman.

  9. As of April 22, 2020, LinkedIn shows 55 Amazon job openings in the New York

City Metropolitan area, including numerous jobs that are directly related to Amazon's infringing

technology. For instance, Amazon is currently hiring a "Product Manager – Product Graph, ML,

NLP, Big Data" in New York City. This role will be "a challenging but fun journey to turn

[Amazon's] big and rapidly changing data into high-quality knowledge to impact customer

experiences across Amazon from Alexa to Search to Shopping." The "Product Graph team" is

"based in New York / Seattle."

  10. According to an Amazon job posting for a "Machine Learning Applied Scientist,

Amazon Advertising," Amazon is "investing in a deep science and technical team in the heart of

NYC." A key part of this job is "query understanding, and vector search." Amazon currently

has numerous open Software Development Engineer positions in NYC. The preferred

qualifications for at least some such positions include "Experience with search engine and

indexing systems."

  11. Amazon "hope[s] to have chances to collaborate" with New York and New

Yorkers "as [it] continue[s] to build [its] presence in New York over time."

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IV.   BACKGROUND.

A.   The Plaintiff MasterObjects and its Search Technology.

12.   From the earliest days of Internet search, the search process has been hampered by what is known as the "request-response loop." The user would type a query into a static input field, click a "submit" or "search" button, wait for the query to be sent to a remote database, wait for the result set to be returned to the server, wait for the server to build an HTML page, wait for the page to load into the browser, and then wait for the client window to be redrawn so that the result set could be viewed. Inherent in the "request-response loop" is the pragmatic reality that, if the result set did not match user expectations, the entire process had to be repeated, iteratively, until the results satisfied the user.

13.   Plaintiff MasterObjects is a software company founded by Mark Smit. Mr. Smit is a named inventor of each of the patents asserted here. In 1999 and 2000, Mr. Smit was a young computer scientist working on relational databases and complex document search and retrieval issues for a technology company near Amsterdam. He found the technology frustrating and slow, and thought he could do better. Accordingly, he left his job and put his life savings in a new company founded to develop better computer search technology. He called the company MasterObjects.

14.   By the early Fall of 2000, Mr. Smit had conceived of a new computer search paradigm. He created a way to have instant search results provided as the user typed in characters in a search request. Mr. Smit's technique uses asynchronous communications between the user's computer and the server performing the search. In the old search model, the communication was "synchronous," *i.e.*, the server would sit idle until the user hit submit, whereupon the server would do its work, and then return the information to the client. As the

client worked, the server waited; as the server communicated, the client waited.

15.   To break this "request-response loop," Mr. Smit understood that he needed a new way to communicate that was asynchronous, *i.e.*, the client and the server could talk to each other within a session in a non-blocking way. In other words, the server and the client could communicate at the same time rather than the server waiting until the client finished and vice versa.

16.   Mr. Smit also envisioned that the servers would store common prior search queries and related results. Storing this information, along with the asynchronous communication, allowed the computer system to quickly associate a few characters of a new request with a pre-existing model of the same request and results thereto, and provide suggested results right away. For example, as a user searching for information about an indoor arena in Manhattan types, "mad" becomes "madi," then later "madison sq," and then out pops search results for "madison square garden." As the user types in a query, the server provides increasingly relevant and responsive information (*e.g.*, information relating to Mad Magazine, then James Madison, then Madison Square Garden). These inventive techniques provide useful search results much faster and more efficiently than prior computer systems, improving computer system functionality, and thereby providing a sophisticated digital search platform.

17.   The patents asserted in this lawsuit embody Mr. Smit's inventions. The claimed features are not merely well-understood, routine, and conventional computer functions; rather they are novel and distinct improvements on the prior approaches known in the art. These novel claimed features improve the functioning of the computer system that implements them. For example, the asynchronous communication feature improves the operation of both the client computer and the server by allowing the two to communicate at the same time, thereby reducing

latency and improving the timeliness of results. As another example, storing prior search queries

and related results improves the operation of both the client computer and the server system by

enabling common search requests and results to be retrieved quickly while utilizing fewer system

resources to accomplish this task. As another example, displaying relevant search results in real

time (*e.g.* while the user is entering the query) improves the operation of the client computer by

enabling it to provide more accurate and timely results to users while bypassing the slow and

frustrating "request-response loop" common in prior systems.

B.   The Patents-In-Suit.

18.   The patents asserted here are MasterObjects': (1) U.S. Patent No. 8,539,024 (the

"'024 Patent"), entitled "System and Method for Asynchronous Client Server Session

Communication;" (2) United States Patent No. 9,760,628 (the "'628 Patent"), entitled "System

and Method for Asynchronous Client Server Session Communication;" (3) United States Patent

No. 10,311,073 (the "'073 Patent"), entitled "System and Method for Asynchronous Retrieval of

Information From a Server to a Client Based On Incremental User Input;" and (4) United States

Patent No. 10,394,866 (the "'866 Patent"), entitled "System and Method for Asynchronous

Client Server Session Communication," collectively, the "Patents-in-Suit."

19.   Each of the Patents-in-Suit have been assigned to MasterObjects. Plaintiff

MasterObjects is the sole legal and rightful owner of each of the Patents-in-Suit.

20.   The '024 Patent was duly and legally issued on September 17, 2013. A true and

correct copy of the '024 Patent is attached as Exhibit A. The '024 Patent covers sending a full

input string. Under claim 1, for example, a client object sends query messages to the server

system, with the term "query messages" representing the lengthening string of characters. *See*

Claim 1, '024 Patent ("a server system, including one or more computers, which is configured to

receive query messages from a client object . . . whereby the query messages represent the lengthening string . . . .").

21.   The '024 Patent has been the subject of other proceedings, including *MasterObjects, Inc. v. Google Inc*., No. 4:15-cv-01775-PJH (N.D. Cal.), *MasterObjects, Inc. v. Yahoo! Inc*., No. 3:13-cv-04326-JSW (N.D. Cal.), *MasterObjects, Inc. v. eBay Inc*., No. 4:16-cv-06824-JSW (N.D. Cal.), *MasterObjects, Inc. v. Facebook, Inc*., No. 6:20-cv-00087 (W.D. Tex.) (the "*Facebook* matter"), and *eBay Inc. v. MasterObjects, Inc*., IPR2017-00740 (Pat. Trial & App. Board) (the "*IPR*").

22.   The *IPR* was an *inter partes* review involving '024 Patent claims 1-3, 6-7, 9, 12, 15-17, 21, 24-26, and 32-37. All of the '024 Patent's independent claims were involved claims. The Patent Trial and Appeal Board ("PTAB") issued a Final Written Decision finding all of the involved claims patentable. A true and correct copy of the Final Written Decision is attached as Exhibit B. The PTAB found that Kravets (U.S. Patent No. 6,704,727) did not anticipate the involved claims; that the involved claims were non-obvious over Kravets; and that the involved claims were non-obvious over the combination of Kravets and Bauer (U.S. Patent No. 6,751,603). The PTAB found that the '024 Patent's independent claims recite specific "usability test[s]," and that Kravets does not disclose or teach the claimed tests.

23.   eBay Inc. appealed the Final Written Decision to the Federal Circuit. The parties to the *IPR* jointly moved to voluntarily dismiss the appeal. The Federal Circuit dismissed the appeal. An *inter partes* review certificate issued on June 11, 2019. The IPR certificate confirmed the patentability of the involved '024 Patent claims.

24.   The '628 Patent was duly and legally issued on September 12, 2017. A true and correct copy of the '628 Patent is attached as Exhibit C.

25.   The '073 Patent was duly and legally issued on June 4, 2019. A true and correct copy of the '073 Patent is attached as Exhibit D. On December 6, 2019, MasterObjects filed a Petition to Correct Priority Under 37 CFR § 1.78(e) relating to the '073 Patent. *See* Exhibit E. On February 14, 2020, MasterObjects filed a Petition Under 37 CFR §1.1182 for Expedited Handling of its 37 CFR § 1.78(e) Petition. The Patent and Trademark Office granted both petitions on February 25, 2020. *See* Exhibit F.

26.   The '866 Patent was duly and legally issued on August 27, 2019. A true and correct copy of the '866 Patent is attached as Exhibit G. On December 6, 2019, MasterObjects filed a 37 CFR § 1.78(e) Petition to Correct Priority Under 37 CFR § 1.78(e) relating to the '866 Patent. *See* Exhibit H. On February 14, 2020 MasterObjects filed a Petition Under 37 CFR §1.1182 for Expedited Handling of its 37 CFR § 1.78(e) Petition. The Patent and Trademark Office granted the 37 CFR §1.1182 Petition and dismissed the 37 CFR § 1.78(e) Petition. *See* Exhibit I. The Patent and Trademark Office decided that MasterObjects had "timely made a claim for benefit of priority by submitting within the time period set forth at 37 CFR 1.78(d) an application data sheet identifying the applications for which the benefit of priority was sought by application number (series code and serial number) and relationship . . . . As the application data sheet properly identified the applications for which priority was sought by application number and relationship, a filing receipt reflective of the acceptance of the claim was issued." *Id.* "In view thereof, a petition under 37 CFR 1.78" was deemed "not necessary" by the Patent and Trademark Office. *See id.*

27.   The '866 Patent is a continuation of the '628 Patent, and the '628 Patent is a continuation of the '024 Patent. The '024 Patent is a continuation of MasterObjects' U.S. Patent 8,112,529 (the "'529 Patent"). (MasterObjects does not assert the '529 Patent here). The '073

Patent is related to the '866 Patent's great-grandparent, the '529 Patent.

C.   The Infringing Amazon Instrumentalities.

28.   Amazon is the top United States company ranked by retail e-commerce sales. *See*
http://emarketer.com/content/digital-investments-pay-off-for-walmart-in-ecommerce-race. Not
surprisingly, Amazon lists a staggering number of products on its U.S. Amazon.com website,
564 million as of January 2018 to be exact. *See* http://www.scrapehero.com/how-many-
products-amazon-sell-worldwide-january-2018/. With this many listings, Amazon's predictive
search function is paramount to an Amazon customer's ability to find products, and thus search
is critical to Amazon. As a CNN journalist put it with respect to his search for socks on
Amazon: "No one could possibly scroll through them all, especially while staring at a
smartphone. It's critical that Amazon shows customers what they truly want."
https://www.cnn.com/2018/10/05/tech/amazon-artificial-intelligence/index.html.

29.   The fact is, Amazon is a retail giant powered by intelligent search algorithms. It
is a search company running a search engine.

30.   Amazon's premier search offering is its product search. This is the search feature
an Amazon customer uses in the Amazon apps for iOS and Android operating systems and on
Amazon.com:
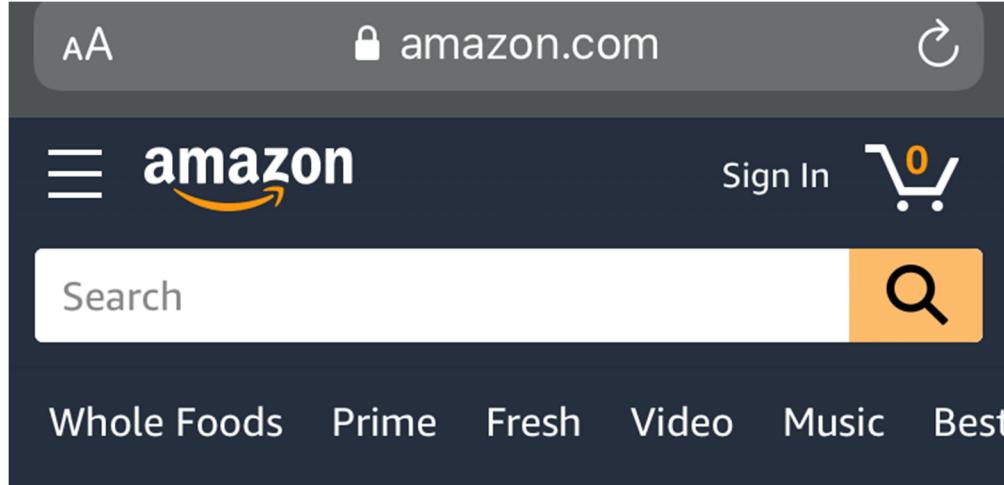
31.   Amazon's product search feature is critical to its core business with "[a]lmost 90 percent of all product views on Amazon result[ing] from Amazon's product search and not merchandising, ads or product aggregators." *See* https://www.marketwatch.com/press-release/the-race-is-on-jumpshot-releases-the-competitive-state-of-ecommerce-marketplaces-data-report-2018-09-06.

32.   Amazon leads the search product field. In 2018, "Amazon overtook Google in product search with about 54 percent of product searches being on Amazon …." https://www.marketwatch.com/press-release/the-race-is-on-jumpshot-releases-the-competitive-state-of-ecommerce-marketplaces-data-report-2018-09-06).[1] "Among weekly [Amazon] Prime users, 79% start their product searches on Amazon, and 65% of other Prime members start on

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[1] *See also* https://www.cnn.com/2018/09/30/tech/amazon-digital-ads-google-facebook-microsoft-oath/index.html ("More people are starting their searches for products on Amazon instead of Google or another search engine …."); http://www.emarketeer.com/content/more-product-searches-start-on-amazon ("A number of consumer surveys have shown that more US digital shoppers now start their searches on Amazon. Nearly half (46.7%) of US internet users started product searches on Amazon compared with 34.6% who went to Google first … And the leading method among digital shoppers in the US surveyed … in February 2018 was searching and buying on Amazon (41%) followed by searching on Google then buying on Amazon (28%)").

Amazon as well." https://www.fool.com/investing/2019/12/26/is-google-amazon-biggest-

competitor.asp.

33.   It is no wonder that in 2014, then Google executive chairman Eric Schmidt

identified Amazon as Google's main search competitor:

> Many people think our main competition is Bing or Yahoo … But, really, **our
> biggest <u>search</u> competitor is Amazon**. People don't think of Amazon as search,
> but if you are looking for something to buy, you are more often than not looking
> for it on Amazon.

https://www.cnet.com/news/googles-biggest-search-competitor-is-amazon-says-former-ceo/

(emphasis added).

34.   Amazon's search prowess makes it not just an e-commerce juggernaut, but a

search ad powerhouse. In this area, still led by Alphabet's Google, Amazon has moved into

second place, passing Microsoft in 2018 to "become the second-largest ad platform for search in

the U.S." *See* https://www.cnbc.com/2019/10/15/amazon-is-eating-into-googles-dominance-in-

search-ads.html. Amazon's share of the search ad market by revenue is expected to grow to

15.9% by 2021. *See id*.

35.   Given the importance of search to Amazon, it is not surprising that it has a

dedicated search technology entity, A9. *See*

https://web.archive.org/web/20190812003716/https://a9.com/what-we-do/product-search.html

("If you've done a search on Amazon, you've used our search engine;" "Within Search we have

the Search Operations team which builds and runs the world's largest e-commerce product

search"). A9 is "responsible for thousands of servers handling hundreds of millions of customer

searches daily." *Id.* "**Search** and several related services [A9] support[s] **are at the core of the**

Amazon business: they help customers find the items they want to buy." *Id.* (emphasis added).

36.   One of Amazon's goals in providing predictive search results is to do so while

minimizing latency. That is, Amazon tries to provide predictive search results as quickly as possible.

37.   As Amazon once explained, "[a]s soon as [it] see[s] the first keystroke, [Amazon is] ready with instant suggestions and a comprehensive set of search results." *See* https://web.archive.org/web/20190812003716/https://a9.com/what-we-do/product-search.html. Amazon "start[s] the search experience by giving customers suggestions on how to formulate their queries ***as soon*** as they start typing." *Id.* (emphasis supplied).

38.   Amazon is well-known for being extraordinarily secretive. As one technology journalist wrote, "[i]t's incredibly rare to get a comment from the company on any story, even if the news is very positive or controversial, and the only time we really hear from the company on the record is when it issues a press release." *See, e.g.*, https://www.businessinsider.com/amazon-secrecy-2013-8. Despite the fact that search is at the core of Amazon's business, it publishes limited information about how its search works. Nevertheless, some basic aspects of Amazon's search can be understood by trying Amazon's search and by inspecting the network traffic that is generated.

39.   As a prominent journalist recently chronicled of his use of Amazon's search:

> I get no further than typing "s" [in the search bar] and Amazon's AI is already offering suggestions. SD card. Spiderman PS4. Shower curtain. To hone this suggestion list, Amazon taps historical data from billions of searches, and the results evolve constantly to reflect how people who start a query with "s" typically complete it. Queries that have been most likely to lead to a sale top the list.

See https://www.cnn.com/2018/10/05/tech/amazon-artificial-intelligence/index.html.

40.   An analysis of network traffic shows that Amazon asynchronously responds to search queries when a new letter is added to a query.

41.   When a user types a query into the Amazon search field, Amazon causes an

HTTP GET method containing a query to be sent by the client side to one or more Amazon

servers. For example, a user types the characters "ro" into the Amazon search field:
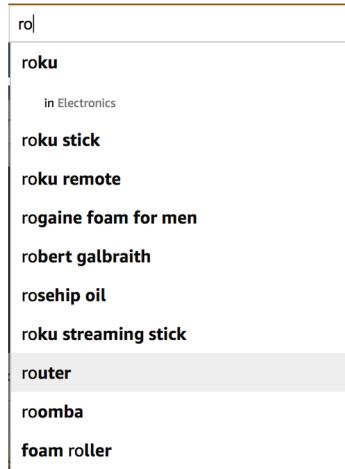
42.   The HTTP GET method contains the lengthening string of characters "ro" input

by the user:

43.   Amazon servers asynchronously receive and respond to the query message over

the Internet. Below is an example of such a response to the query containing the string "ro.":

Overview   Request   **Response**   Summary   Chart   Notes

HTTP/1.1 200 OK
Server: Server
Date: Wed, 25 Mar 2020 13:54:00 GMT
Content-Type: application/json
Transfer-Encoding: chunked
Access-Control-Allow-Origin: *
Cache-Control: no-cache
Vary: Accept-Encoding,X-Amzn-CDN-Cache,X-Amzn-AX-Treatment,User-Agent
Content-Encoding: gzip
x-amz-rid: GB3MRF0S29B2BB8AY7BZ
Connection: keep-alive

{"alias":"aps","prefix":"ro","suffix":null,"suggestions":[{"suggType":"KeywordSuggestion","type":"KEYWORD","value":"roku","refTag":"nb_sb_ss_i_1_2","strategyId":"organic-pltr","ghost":false,"help":false,"
streaming stick","refTag":"nb_sb_ss_i_3_2","strategyId":"organic-pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotations":[]}],"fallback":false,"blackListed":false,"
men","refTag":"nb_sb_ss_i_4_2","strategyId":"organic-pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotations":[]}],"fallback":false,"blackListed":false,"spellCorrect
remote","refTag":"nb_sb_ss_i_6_2","strategyId":"organic-pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotations":[]}],"fallback":false,"blackListed":false,"spellCorr
pin","refTag":"nb_sb_ss_i_8_2","strategyId":"organic-pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotations":[]}],"fallback":false,"blackListed":false,"spellCorrecte
oil","refTag":"nb_sb_ss_i_10_2","strategyId":"organic-pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotations":[]}],"fallback":false,"blackListed":false,"spellCorrecte

44.   As the user continues to type (in this example, the letter "x"), Amazon causes

another query to be sent containing the lengthening string ("rox") and Amazon's server system

asynchronously receives and responds to that query:

User types "x":
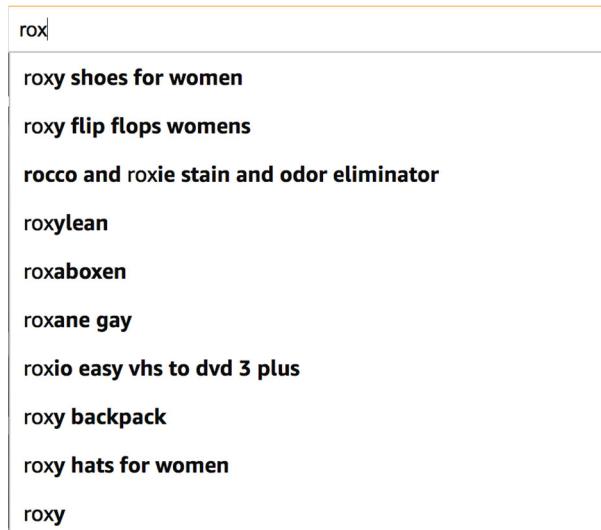
Query containing "rox" sent:

	200	GET	completion.amazon.com	/api/2017/suggestions?session-id=143-0712803-4871430&customer-id=&re...

Filter: completion

Overview	**Request**	Response	Summary	Chart	Notes

Name	Value
session-id	143-0712803-4871430
customer-id	
request-id	RTZ9P0XMX1FXAGX54N3J
page-type	Gateway
lop	en_US
site-variant	desktop
client-info	amazon-search-ui
mid	ATVPDKIKX0DER
alias	aps
b2b	0
fresh	0
ks	88
prefix	**rox**
event	onKeyPress
limit	11
fb	1
suggestion-type	KEYWORD
suggestion-type	WIDGET
_	1585146505180

Amazon's response includes results:

{"alias":"aps","prefix":"rox","suffix":null,"suggestions":[{"suggType":"KeywordSuggestion","type":"KEYWORD","value":"roxy flip flops womens","refTag":"nb_sb_ss_i_1_3","strategyId":"organic-pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotations":[]}],"fallback":false,"blackListed":false,"spellCorrected":false,"xcatOnly":false},{"suggType":"KeywordSuggestion","type":"KEYWORD","value":"roxy shoes for women","refTag":"nb_sb_ss_i_2_3","strategyId":"organic-pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotations":[]}],"fallback":false,"blackListed":false,"spellCorrected":false,"xcatOnly":false},{"suggType":"KeywordSuggestion","type":"KEYWORD","value":"roxy flip flops","refTag":"nb_sb_ss_i_3_3","strategyId":"organic-pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotations":[]}],"fallback":false,"blackListed":false,"spellCorrected":false,"xcatOnly":false},{"suggType":"KeywordSuggestion","type":"KEYWORD","value":"roxy","refTag":"nb_sb_ss_i_4_3","strategyId":"organic-pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotations":[]}],"fallback":false,"blackListed":false,"spellCorrected":false,"xcatOnly":false},{"suggType":"KeywordSuggestion","type":"KEYWORD","value":"roxaboxen","refTag":"nb_sb_ss_i_5_3","strategyId":"organic-pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotations":[]}],"fallback":false,"blackListed":false,"spellCorrected":false,"xcatOnly":false},{"suggType":"KeywordSuggestion","type":"KEYWORD","value":"roxy sandals for

women","refTag":"nb_sb_ss_i_6_3","strategyId":"organic-pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotations":[]}],"fallback":false,"blackListed":false,"spellCorrected":false,"xcatOnly":false},{"suggType e":"KeywordSuggestion","type":"KEYWORD","value":"roxylean","refTag":"nb_sb_ss_i_7_3"," strategyId":"organic-pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotations":[]}],"fallback":false,"blackListed":false,"spellCorrected":false,"xcatOnly":false},{"suggType e":"KeywordSuggestion","type":"KEYWORD","value":"roxy swimsuits for women","refTag":"nb_sb_ss_i_8_3","strategyId":"organic-pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotations":[]}],"fallback":false,"blackListed":false,"spellCorrected":false,"xcatOnly":false},{"suggType e":"KeywordSuggestion","type":"KEYWORD","value":"roxy girls swimwear","refTag":"nb_sb_ss_i_9_3","strategyId":"organic-pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotations":[]}],"fallback":false,"blackListed":false,"spellCorrected":false,"xcatOnly":false},{"suggType e":"KeywordSuggestion","type":"KEYWORD","value":"roxy hat","refTag":"nb_sb_ss_i_10_3","strategyId":"organic-pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotations":[]}],"fallback":false,"blackListed":false,"spellCorrected":false,"xcatOnly":false}],"suggestionTitleId":null,"responseId":"1FL8BOA06ZMT6","shuffled":false}

45.   Amazon's servers use the input to query information available to Amazon and use that information to send results that are responsive to the input. Some of the information queried by Amazon's servers includes attributes in Amazon's product catalog and information derived from pervious customer behavior in search. *See*, *e.g.*, *Adrian Boteanu, Emily Dutile, Adam Kiezun, Shay Artzi,* "Subjective Search Intent Predictions using Customer Reviews" (available at https://www.amazon.science/publications/subjective-search-intent-predictions-using-customer-reviews). The information available to Amazon's servers includes product information, and non-product information, such as the name of a product category that a user might be interested in, such as "Electronics" in the example below:

r

roku

in Electronics

reusable straws

resistance bands

ring doorbell

rx bars

relative insanity

red dead redemption 2

relative insanity game by jeff foxworthy

roku stick

reading glasses
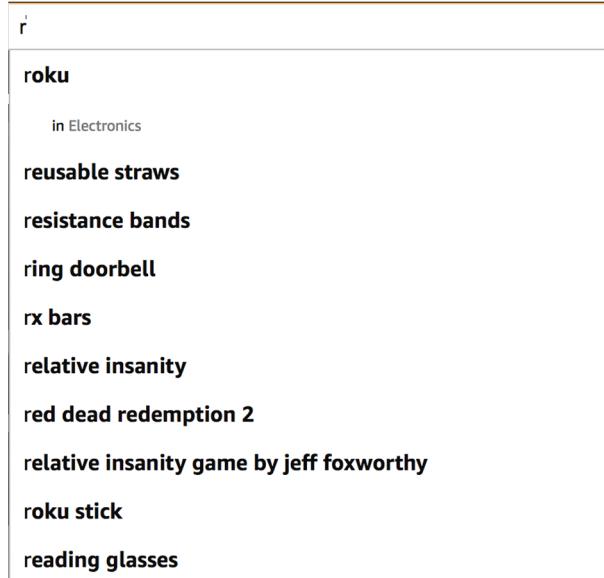
46.   When the response is received, the client side tests the usability of the results in

the response by checking that the results in the response correspond to the present query. The

response from Amazon's servers includes a "prefix" value corresponding to input used for the

query. This prefix value identifies the original query string associated with the response and can

be used to check that the results in the response correspond to the present query and thus that the

results in the response are usable.

{} 200	GET	completion.amazon.com	/api/2017/suggestions?session-id=143-0712803-4871430&customer-id=&re...

Filter: completion

| Overview | **Request** | Response | Summary | Chart | Notes |

Name	Value
session-id	143-0712803-4871430
customer-id	
request-id	RTZ9P0XMX1FXAGX54N3J
page-type	Gateway
lop	en_US
site-variant	desktop
client-info	amazon-search-ui
mid	ATVPDKIKX0DER
alias	aps
b2b	0
fresh	0
ks	88
prefix	**rox**
event	onKeyPress
limit	11
fb	1
suggestion-type	KEYWORD
suggestion-type	WIDGET
_	1585146505180

Amazon's response includes the prefix value:

{"alias":"aps","prefix":"rox","suffix":null,"suggestions":[{"suggType":"KeywordSuggestion","type":"KEYWORD","value":"roxy flip flops womens","refTag":"nb_sb_ss_i_1_3","strategyId":"organic-pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotations":[]}],"fallback":false,"blackListed":false,"spellCorrected":false,"xcatOnly":false},{"suggType":"KeywordSuggestion","type":"KEYWORD","value":"roxy shoes for women","refTag":"nb_sb_ss_i_2_3","strategyId":"organic-pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotations":[]}],"fallback":false,"blackListed":false,"spellCorrected":false,"xcatOnly":false},{"suggType":"KeywordSuggestion","type":"KEYWORD","value":"roxy flip flops","refTag":"nb_sb_ss_i_3_3","strategyId":"organic-pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotations":[]}],"fallback":false,"blackListed":false,"spellCorrected":false,"xcatOnly":false},{"suggType":"KeywordSuggestion","type":"KEYWORD","value":"roxy","refTag":"nb_sb_ss_i_4_3","strategyId":"organic-pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotations":[]}],"fallback":false,"blackListed":false,"spellCorrected":false,"xcatOnly":false},{"suggType":"KeywordSuggestion","type":"KEYWORD","value":"roxaboxen","refTag":"nb_sb_ss_i_5_3","strategyId":"organic-pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotations":[]}],"fallback":false,"blackListed":false,"spellCorrected":false,"xcatOnly":false},{"suggType":"KeywordSuggestion","type":"KEYWORD","value":"roxy sandals for women","refTag":"nb_sb_ss_i_6_3","strategyId":"organic-

pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotati ons":[]}],"fallback":false,"blackListed":false,"spellCorrected":false,"xcatOnly":false},{"suggTyp e":"KeywordSuggestion","type":"KEYWORD","value":"roxylean","refTag":"nb_sb_ss_i_7_3"," strategyId":"organic-
pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotati ons":[]}],"fallback":false,"blackListed":false,"spellCorrected":false,"xcatOnly":false},{"suggTyp e":"KeywordSuggestion","type":"KEYWORD","value":"roxy swimsuits for women","refTag":"nb_sb_ss_i_8_3","strategyId":"organic-
pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotati ons":[]}],"fallback":false,"blackListed":false,"spellCorrected":false,"xcatOnly":false},{"suggTyp e":"KeywordSuggestion","type":"KEYWORD","value":"roxy girls swimwear","refTag":"nb_sb_ss_i_9_3","strategyId":"organic-
pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotati ons":[]}],"fallback":false,"blackListed":false,"spellCorrected":false,"xcatOnly":false},{"suggTyp e":"KeywordSuggestion","type":"KEYWORD","value":"roxy hat","refTag":"nb_sb_ss_i_10_3","strategyId":"organic-
pltr","ghost":false,"help":false,"queryUnderstandingFeatures":[{"source":"QU_TOOL","annotati ons":[]}],"fallback":false,"blackListed":false,"spellCorrected":false,"xcatOnly":false}],"suggesti onTitleId":null,"responseId":"1FL8BOA06ZMT6","shuffled":false}

47.   In addition, on information and belief, each response from Amazon's servers is

associated by an XMLHTTP request from the client. On information and belief, the client side

uses AJAX technology to associate each XMLHTTP request to an identifier. On information

and belief, this identifier can be used to check that the results correspond to the present query and

thus that the results in the response are usable.

48.   If usability is established, the client side displays at least some result information

to the user:
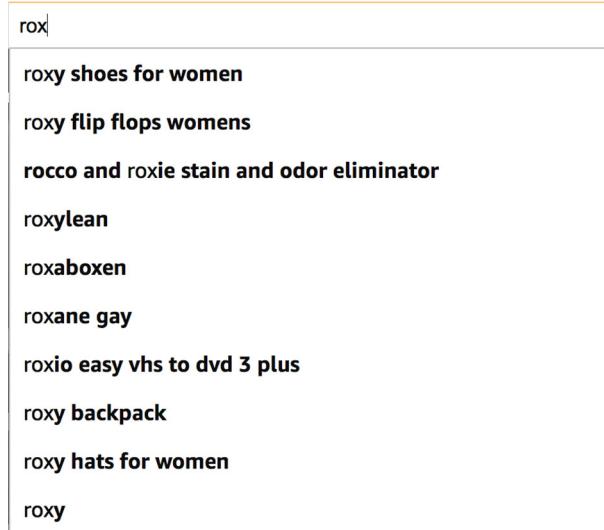
49.   Amazon always displays the results for the latest input.

50.   When a user clicks on a result, Amazon causes the display of additional content relating to that result.

51.   On information and belief, Amazon's servers have a query and results cache that contains queries and results based at least in part on previous queries received from Amazon's customers. On information and belief, Amazon uses a cache in order to minimize latency. For instance, Amazon maintains an internal dataset that "contains affinity scores between query keywords and product IDs (ASIN. Amazon Standard Identification Number) using previous customer behavior in search, such as clicks, adds to cart, and purchases." *See, e.g., Adrian Boteanu, Emily Dutile, Adam Kiezun, Shay Artzi,* "Subjective Search Intent Predictions using Customer Reviews" (available at https://www.amazon.science/publications/subjective-search-intent-predictions-using-customer-reviews). The affinity scores stored in the "Amazon-internal dataset" are "integers between 1 and 15, the higher the score the stronger the affinity between a query and a product." *Id.*

52.   Amazon's predictive search for its Amazon websites ("Amazon Predictive Search"), including both for its Amazon.com desktop and mobile websites, infringes claims of

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the Patents-in-Suit.

53.   In addition, Amazon's predictive search for client applications and platforms it makes, sells, and/or distributes ("Amazon Applications"), including the Amazon applications for the iOS and Android mobile phone platforms for Amazon.com, infringes claims of the Patents-in-Suit.

54.   Amazon Predictive Search and Amazon Applications (collectively the "Accused Instrumentalities") meet all the elements of claims of the Patents-in-Suit. Amazon infringes the Patents-in-Suit.

V.   NOTICE.

55.   The allegations of each foregoing paragraphs are incorporated by reference as if fully set forth herein.

56.   The '024, '628 and '866 Patents are related to MasterObjects' U.S. Patent No. 7,752,326 (the "'326 Patent") through the '529 Patent. The '326 Patent is a continuation-in-part of the '529 Patent. The '073 Patent is a continuation of MasterObjects' U.S. Application 12/176,984, which is in turn a continuation-in-part of the '326 Patent.

57.   MasterObjects asserted the '326 Patent against Amazon in *MasterObjects, Inc. v. Amazon.com, Inc*., No. 3:11-cv-01055-CRB, N.D. Cal (*Amazon I*). MasterObjects' *Amazon I* complaint was filed on March 7, 2011. Amazon has been on notice that it infringes MasterObjects' intellectual property since at least March 2011.

58.   Amazon has been on constructive notice of the Patents-in-Suit. MasterObjects ceased product sales by at least January 2013. The Patents-in-Suit all issued after January 2013. More, MasterObjects' website states that its technology is protected by the '024 Patent. Further, the '628, '073, and '866 Patents are asserted in the *Facebook* matter, and that matter remains

pending.   MasterObjects has complied with, and/or MasterObjects need not comply with, 35

U.S.C. § 287(a).

59.   At least by filing and serving this complaint, MasterObjects has given Amazon

actual written notice of the Patents-in-Suit and of Amazon's infringement thereof.

VI.   CLAIMS.

A. Infringement of United States Patent No. 8,539,024.

60.   MasterObjects repeats, realleges, and incorporates by reference, as if fully set

forth herein, the allegations of paragraphs 1 to 59 above.

61.   Amazon infringes claims of the '024 Patent. Amazon, without authority, makes,

uses, imports, offers to sell, and/or sells instrumentalities that practice inventions covered by

claims of the '024 Patent. Amazon Predictive Search and/or Amazon Applications meet all of

the elements of claims of the '024 Patent, including, all the elements of the '024 Patent, Claim 1.

Amazon controls and benefits from each Amazon Predictive Search and/or Amazon Applications

element that meets each limitation of at least '024 Patent, Claim 1. Amazon has been, is

currently, and continues to, directly infringe at least Claim 1 of the '024 Patent in violation of 35

U.S.C. § 271(a), literally or under the doctrine of equivalents, through Amazon Predictive Search

and/or Amazon Applications, that practice the inventions disclosed in the '024 Patent. *See* above

at ¶¶ 28-54.

62.   Claim 1 of the '024 Patent recites:

A system comprising:

a server system, including one or more computers, which is configured to receive query
messages from a client object, the server system asynchronously receiving and
responding to the query messages from the client object over a network;

the client object that, while a user is providing input comprising a lengthening string of
characters, sends query messages to the server system;

whereby the query messages represent the lengthening string as additional characters are being input by the user; and

wherein the server system, while receiving said query messages, uses the input to query data available to the server system and send return messages to the client object containing results in response to the input; and

wherein, upon receiving a return message of the return messages from the server system, the client object tests the usability of the results in the return message by checking that the return message corresponds to the latest query, and if usability is established, the client object displays or returns at least some result data to the user.

63.   As of the filing and service of this complaint, Amazon's infringement of the '024 Patent has been and continues to be willful and deliberate. Amazon's post-complaint filing, post-complaint service conduct has been egregious. For example, Amazon's post-complaint conduct is especially egregious because, by service of this Complaint, Amazon is now aware that the '024 Patent has survived *inter partes* review. Moreover, Amazon's usage of MasterObjects's patented technology will only increase because Amazon's market share in search and the number of searches conducted on Amazon are only expected to increase.

64.   As a result of the infringement by Amazon, MasterObjects has been damaged, and will continue to be damaged, until Amazon is enjoined from further acts of infringement.

65.   Amazon will continue to infringe unless enjoined by this Court. MasterObjects faces real, substantial and irreparable damage and injury of a continuing nature from infringement for which MasterObjects has no adequate remedy at law.

B. Infringement of United States Patent No. 9,760,628.

66.   MasterObjects repeats, realleges, and incorporates by reference, as if fully set forth herein, the allegations of paragraphs 1 to 65 above.

67.   Amazon infringes claims of the '628 Patent. Amazon, without authority, makes, uses, imports, offers to sell, and/or sells instrumentalities that practice inventions covered by

claims of the '628 Patent. Amazon Predictive Search and/or Amazon Applications meet all of

the elements of claims of the '628 Patent, including, all the elements of the '628 Patent, Claim

25. Amazon controls and benefits from each Amazon Predictive Search and/or Amazon

Applications element that meets each limitation of at least '628 Patent, Claim 25. Amazon has

been, is currently, and continues to, directly infringe at least Claim 25 of the '628 Patent in

violation of 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, through Amazon

Predictive Search and/or Amazon Applications, that practice the inventions disclosed in the '628

Patent. *See* above at ¶¶ 28-54.

68.   Claim 25 of the '628 Patent recites:

A non-transient computer readable medium containing program instructions for causing a
computer to implement:

a client object adapted to receive input comprising a lengthening string of characters from
a user, the client object sending multiple query messages corresponding to multiple
versions of said input to a server system while a user modifies the input comprising a
lengthening string of characters, the client object asynchronously receiving return
messages with results in response to the multiple versions of the input;

wherein upon receiving one of the return messages, the client object checks the usability
of the results of the one of the return messages using a latest version of the input to
determine whether to display at least some of the results of the one of the return messages
to the user.

69.   As of the filing and service of this complaint, Amazon's infringement of the '628

Patent has been and continues to be willful and deliberate. Amazon's post-complaint filing,

post-complaint service conduct has been egregious. For example, Amazon's post-complaint

conduct is especially egregious because, by service of this Complaint, Amazon is now aware that

the '024 Patent has survived *inter partes* review. Moreover, Amazon's usage of MasterObjects's

patented technology will only increase because Amazon's market share in search and the number

of searches conducted on Amazon are only expected to increase.

70.   As a result of the infringement by Amazon, MasterObjects has been damaged, and will continue to be damaged, until Amazon is enjoined from further acts of infringement.

71.   Amazon will continue to infringe unless enjoined by this Court. MasterObjects faces real, substantial and irreparable damage and injury of a continuing nature from infringement for which MasterObjects has no adequate remedy at law.

C. Infringement of United States Patent No. 10,311,073.

72.   MasterObjects repeats, realleges, and incorporates by reference, as if fully set forth herein, the allegations of paragraphs 1 to 71 above.

73.   Amazon infringes claims of the '073 Patent. Amazon, without authority, makes, uses, imports, offers to sell, and/or sells instrumentalities that practice inventions covered by claims of the '073 Patent. Amazon Predictive Search and/or Amazon Applications meet all of the elements of claims of the '073 Patent, including, all the elements of the '073 Patent, Claim 1. Amazon performs each Amazon Predictive Search and/or Amazon Applications step that meets each limitation of at least '073 Patent, Claim 1. Amazon has been, is currently, and continues to, directly infringe at least Claim 1 of the '073 Patent in violation of 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, through Amazon Predictive Search and/or Amazon Applications, that practice the inventions disclosed in the '073 Patent. *See* above at ¶¶ 28-54 .

74.   Claim 1 of the '073 Patent recites:

A method, comprising:

detecting, on a client computer, entry of a content search query into a field on a web page by a user;

while the user is entering the content search query, automatically sending a string representing an incomplete search query to a server system comprising one or more computers;

receiving, by the server system, the string;

matching, by the server system, the string to entries in a cache of query strings and search results based on content queries received from multiple users, whereby cached search results contain a subset of data from one or more content sources;

retrieving, by the server system, search result data for the incomplete search query;

sending, by the server system to the client computer prior to completion of the search query at the client, a message containing information identifying the incomplete search query and at least a portion of the search result data that identifies the content in a content source;

asynchronously receiving, on the client computer, without loading another web page and while the user is entering the content search query into the field, the message, and

displaying at least a portion of the search result data on the client computer and enabling the user to retrieve additional content data corresponding to the search result.

75.   As of the filing and service of this complaint, Amazon's infringement of the '073 Patent has been and continues to be willful and deliberate. Amazon's post-complaint filing, post-complaint service conduct has been egregious. For example, Amazon's post-complaint conduct is especially egregious because, by service of this Complaint, Amazon is now aware that the '024 Patent has survived *inter partes* review. Moreover, Amazon's usage of MasterObjects's patented technology will only increase because Amazon's market share in search and the number of searches conducted on Amazon are only expected to increase.

76.   As a result of the infringement by Amazon, MasterObjects has been damaged, and will continue to be damaged, until Amazon is enjoined from further acts of infringement.

77.   Amazon will continue to infringe unless enjoined by this Court. MasterObjects faces real, substantial and irreparable damage and injury of a continuing nature from infringement for which MasterObjects has no adequate remedy at law.

D. Infringement of United States Patent No. 10,394,866.

78.   MasterObjects repeats, realleges, and incorporates by reference, as if fully set

forth herein, the allegations of paragraphs 1 to 77 above.

79.   Amazon infringes claims of the '866 Patent. Amazon, without authority, makes, uses, imports, offers to sell, and/or sells instrumentalities that practice inventions covered by claims of the '866 Patent. Amazon Predictive Search and/or Amazon Applications meet all of the elements of claims of the '866 Patent, including, all the elements of the '866 Patent, Claim 1. Amazon performs each Amazon Predictive Search and/or Amazon Applications step that meets each limitation of at least '866 Patent, Claim 1. Amazon has been, is currently, and continues to, directly infringe at least Claim 1 of the '866 Patent in violation of 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, through Amazon Predictive Search and/or Amazon Applications, that practice the inventions disclosed in the '866 Patent. *See* above at ¶¶ 28-54.

80.   Claim1 of the '866 Patent recites:

A method, comprising:

automatically detecting, on a client computer, modification by a user of a search query for content from one or more remote content sources in an entry field;

sending a request message containing the string representing an incomplete version of the search query over a network to a server system comprising one or more computers serving a plurality of client computers,

receiving, by the server system, the string;

matching, by the server system, the string to entries in a cache of queries and search results previously retrieved from one or more content sources;

retrieving, by the server system, data indicative of the search results matching the incomplete version of the search query;

asynchronously sending, by the server system to the client computer a message containing at least a portion of the data indicative of the search results;

receiving, on the client computer, the message; and

displaying at least a portion of the data indicative of the search results on the client computer.

81.   As of the filing and service of this complaint, Amazon's infringement of the '866

Patent has been and continues to be willful and deliberate. Amazon's post-complaint filing,

post-complaint service conduct has been egregious. For example, Amazon's post-complaint

conduct is especially egregious because, by service of this Complaint, Amazon is now aware that

the '024 Patent has survived *inter partes* review. Moreover, Amazon's usage of MasterObjects's

patented technology will only increase because Amazon's market share in search and the number

of searches conducted on Amazon are only expected to increase.

82.   As a result of the infringement by Amazon, MasterObjects has been damaged, and

will continue to be damaged, until Amazon is enjoined from further acts of infringement.

83.   Amazon will continue to infringe unless enjoined by this Court. MasterObjects

faces real, substantial and irreparable damage and injury of a continuing nature from

infringement for which MasterObjects has no adequate remedy at law.

VII.   PRAYER FOR RELIEF.

WHEREFORE, MasterObjects prays for entry of judgment as follows:

84.   Judgment in MasterObjects's favor and against Amazon on all causes of action

alleged herein;

85.   That the Patents-in-Suit are valid and enforceable;

86.   That Amazon has infringed one or more claims of each of the Patents-in-Suit;

87.   That Amazon's infringement of the Patents-in-Suit was willful;

88.   That Amazon account for and pay to MasterObjects all damages caused by the

infringement of the Patents-in-Suit, which by statute can be no less than a reasonable royalty

with respect to each Patent-in-Suit;

89.   That the damages to MasterObjects with respect to each Patent-in-Suit be

increased by three times the amount found or assessed pursuant to 35 U.S.C. § 284 and that

Amazon account for and pay to MasterObjects the increased amounts;

90.   That this be adjudicated an exceptional case and MasterObjects be awarded its

attorneys' fees in this action pursuant to 35 U.S.C. § 285;

91.   That this Court issue preliminary and final injunctions enjoining Amazon, its

officers, agents, servants, employees and attorneys, and any other person in active concert or

participation with them, from continuing the acts herein complained of with respect to

infringement of the Patents-in-Suit, and more particularly, that Amazon and such other persons

be permanently enjoined and restrained form further infringing the Patents-in-Suit;

92.   That MasterObjects be granted pre-judgment and post-judgment interest on the

damages caused to it by reason of Amazon's conduct at the maximum legal rates provided by

statute or law;

93.   That this Court award MasterObjects its costs and disbursements in this civil

action, including reasonable attorneys' fees; and

94.   That MasterObjects be granted such other and further relief as the Court may

deem just and proper under the circumstances.

VIII.   JURY DEMAND

95.   MasterObjects demands a jury trial on all causes of action, claims, or issues in this

action that are triable as a matter of right to a jury.

Dated May 4, 2020   Respectfully submitted,
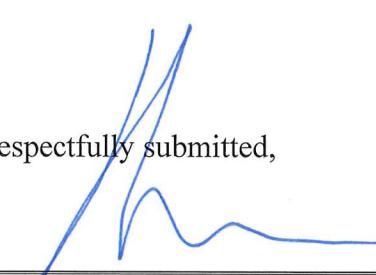
                                                                   _____
                                                                   Spencer Hosie
                                                                   (*pro hac vice* application pending)
                                                                   (CA Bar No. 101777)
                                                                   shosie@hosielaw.com

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Brandon C. Martin
(*pro hac vice* application pending)
(CA Bar No. 269624)
bmartin@hosielaw.com
Francesca Miki Shima Germinario
(*pro hac vice* application to be filed)
(NY Bar No. 5629407)
(CA Bar No. 326208)
fgerminario@hosielaw.com
HOSIE RICE LLP
600 Montgomery St., 34th Floor
San Francisco, CA 94111
Tel: 415.247.6000
Fax: 415.247.6001

Attorneys for Plaintiff MasterObjects, Inc.